THE MARINE RECORD

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SHIPBUILDING.

While it is our province to uphold American shipbuilding, owning and sailing, it is always as well to look to leeward and see what others are doing. In this connection our attention has recently been drawn to the work in German shipyards, and that they are forging ahead is simply the question of the day. One of our foreign exchanges thus speaks of our nearest competitor:

The rapid work being done on the "Schichau" and "Vulcan" steamships represents in some measure the progressive policy of the North German Lloyd. The two ships are being constructed at F. Schichau's establishment at Dantzig, the Kaiser Friedrich, for the Atlantic service, and the Bremen for the service to Australia. This, however, does not exhaust the new work for the line; the Vulcan works at Stettin have in hand the Kaiser Wilhelm der Gross, also for the Atlantic service, and, like Mr. Schichau's ship, intended to excel everything afloat, not even excluding the Campania and Lucania. The Vulcan company have just completed the Friedrich der Gross, and are completing the Konigin Luise, both corresponding to the Bremen, while Messrs. Blohm & Voss, of Hamburg, have completed the Barbarossa. These six vessels are propelled by twin-screws, and represent a tonnage of 68,300, while the collective power is 87,000 indicated horse power. The displacement tonnage is 110,000 tons. The boats for the East have a speed of from 14 to 15 knots, the two for the Atlantic of 22 knots. These facts not only prove the progress of shipbuilding in Germany, but also the advance and successful management of the North German Lloyd Line. As to the high speed Atlantic liners there is an interesting difference between Mr. Schichau's design and that of the Vulcan Company. Each meet the same conditions as to passenger accommodations and speed; the success of the Prinz Regent Luitpold and Prinz Heinrich by Mr. Schichau, and the Spree, Havel, and Kaiser Wilhelm by the Vulcan Works, give assurance of realization in both cases. The new Schichau ship is the smaller, being 12,800 tons register against 13,500 tons. The former is 590 feet long, and she will be fitted with two of Schichau's balanced quadruple expansion engines, together indicating 28,000 indicated horse power. The Bremen represents a class, of which, as we have indicated, four have been built. She is 525 feet long between the perpendiculars, 60 feet beam, with a depth of hold of 38 feet, and at 28 feet draught displaces 18,000 tons. The registered tonnage is 10,000.

BAROMETER--THERMOMETERS.

All measures are duly gauged on scientific and natural principles, therefore, there ought to be little or no difficulty in anyone understanding the readings thereof. Besides there is not a single work extant, which, treating upon the subject, does not give a simple, clear and definite explanation of the various measures. Now relative to the barometer the free and unfettered air balances a column of mercury varying in height according to the circumstances of the moment, whose average elevation at the level of the sea is thirty inches. It is known, because directly ascertainable, that thirty cubic inches of mercury weigh close upon fifteen pounds avoirdupois, and, therefore, as commonly expressed, the pressure of the atmosphere is, under normal conditions, fifteen pounds on every square inch equivalent to nearly a ton on a square foot, more than 8½ tons on a square yard, and of 100 tons on a square of 10¼ feet side. Scientific calculation also places the aggregate weight of the atmospheric envelope surrounding the world at about five trillions of tons, and this may be represented as the weight of a solid leaden ball having a diameter of sixty miles. There is perhaps a little more denseness about the workings of a thermometer, and this may be partly due to the liquid having partly evaporated from the main column and condensed at the end of the tube farthest from the bulb, the thermometer then reading just as many degrees too low as there are degrees of spirit at the top of the tube. To obviate this grasp the thermometer firmly, resting a finger on the tube so that there may be no vibration, and, holding the bulb downward, give several strong, pendulous swings. This will usually send the spirits from the top and send the index into the bulb. Stand the thermometer bulb downward for an hour, then reverse it and very gently shake the index out of the bulb and let it slide to the end of the column.

As is well known, the barometer is an instrument for determining the weight or pressure of the atmosphere. The thermometer, to show or measure the temperature, on the principle that changes of temperature in everything, or rather bodies, are always attended by proportional changes in their dimensions or volumes—hence the temperature of the physique or atmosphere may be taken by a thermometer, but not by a barometer.

AIDS TO NAVIGATION.

A Washington special dispatch says: "Representative Burton went before the subcommittee of the House appropriations committee, and learned that the committee will not at this session incorporate in the sundry civil bill appropriations for lights on the lakes that have not already been provided for by legislation. Mr. Burton is convinced that it will do no good to make a fight in the House for the additional lights that are needed, but he expects to carry the matter to the Senate, and, if possible, secure an amendment to the bill in that body."

ORDINARY WORK.

Last season the government engineers spent about $7,000 removing sand from the channel of the Kalamazoo river at Saugatuck, Mich., and to show how little was the permanent benefit obtained, it is said that for more than half a mile there is not sufficient depth of water to float a light-draft tug, and the present condition of the harbor would not indicate that a single yard of sand has been removed. It will require the services of a dredge for six or eight weeks in the spring to open a channel sufficient to let the boats out, and continuously thereafter to enable them to continue running.

THE LARGEST BOILER PLATE.

The largest steam boiler plate in the world was recently turned out at the Krupp Works, in Essen, Germany. Its dimensions are as follows: Length, 39 feet; width, 11 feet; thickness, 1¼ inches; surface, 429 square feet, and weight, 37,600 pounds. Compared with this gigantic steel plate the one recently rolled by the Stockton Malleable Iron Company, of England, sinks into insignificance. This plate, which was announced by the makers as the largest ever turned out in England, measures: Length, 74 feet; width, 5 feet; thickness, ¾ inch. Its surface measures nearly 370 square feet, and it weighs 12,300 pounds.

A JUST AND SENSIBLE DECISION.

The Secretary of War recommended to Congress that $160,000 be expended by the government in procuring a depth of sixteen feet of water in the harbor of Charlevoix, Mich. He says that the place is becoming popular as a summer resort, and that a better harbor is demanded by the shipping interests of the lakes. An accurate survey and examination of the harbor has recently been made. The secretary, however, declares that the people of Charlevoix ought to show a greater interest in their harbor themselves if they expect the government to spend money there. He suggests that all government improvements be delayed until the local authorities have removed certain obstructions.

GOVERNMENT EMPLOYMENT.

A civil service examination of direct importance to the lake marine community will shortly be held to select a larger number of men for work on lake, river and harbor improvements in the engineer service. The examinations are to be held in cities where there are local civil service boards and sufficient applicants. The examination which will be most in order at or from lake ports and for service as mentioned in the foregoing comprises two groups, the first embracing all officers licensed under the steamboat inspection service, including, of course, engineers. The second group will consist of mechanics and special callings, such as leadsmen, wheelsmen, riggers, boatmen, cooks, calkers, carpenters, etc. Book learning as such will not be required from the second group, ages preferably between 25 and 45. Age, character, skill, and physical qualifications are to count more than mere book learning. Applications should be filed with the Civil Service Commission at Washington before February 1 and examinations will take place shortly thereafter. Further applications will be considered up to June 1. It would further appear that for the latter class no educational tests are imposed, so that any competent workman can secure employment, provided he is skilled in his trade or calling and can furnish evidence that such is the case.

LAX METHODS OF TESTING STEEL.

A short time ago the Secretary of the Navy took up for consideration the report of the special board which investigated the complaints from the Newport News constructors that steel of inferior quality had been supplied by the Carnegie works for battleships Kentucky and Kearsarge. The report is a copious statement of the facts disclosed by the many tests made by the board and the defective plates are fully identified. The board demonstrated that the present system of inspection is ineffective and plates are shown to have reached the shipyards that never were inspected at all—at least they bore none of the inspector's marks. The board has not yet examined the plates for the battleship Illinois, but as far as it has gone the inquiry has revealed the necessity for a radical change in the method of inspection, and Secretary Herbert will probably substitute expert civilian inspectors for the inexperienced naval officers now employed, acting under a special board composed of a constructor and engineer and one line officer for the present steel board, made up exclusively of line officers.

IMMENSE GRAIN HANDLING FACILITIES.

During 1896 there were 76,000,000 bushels of grain handled in Superior and Duluth, which is an increase of about 40 per cent over the preceding year and almost 50 per cent more than for 1894. The shipments consisted of 70,086,447 bushels, as compared with 56,000,000 bushels in 1895. The receipts consisted of wheat, 56,569,776 bushels, as compared with 49,509,378 a year ago; corn, 410,755; oats, 4,832,093, as compared with 1,140,547; rye, 1,497,870; barley, 6,920,302, as compared with 2,356,519; flax, 5,984,055, as against 2,435,132. Shipments: Wheat, 50,489,237; corn, 408,433; oats, 4,908,257; rye, 1,380,862; barley, 6,573,125; flax, 6,326,533. Flour production during 1896 at the head of the lakes shows a slight decrease, owing to a mill being closed by a receiver and the inactivity of another. The production for the year amounted to 3,120,945 barrels, and direct exports to 1,228,395 barrels.

DRY-DOCK ASSOCIATION.

The annual meeting of the Dry Dock Association of the Lakes will be held at the Auditorium, Chicago, Wednesday, January 20.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to Marine Record.

H. W. Cook & Co. chartered the steamer New Orleans for oats to Buffalo at 2 cents.

At the Independent Tug Line's floating dry-dock, the tug Mentor is in dock for some necessary repairs.

The O. S. Richardson Fueling Co. have engaged the services of Capt. George Tebo as their sales agent at this port.

J. A. Calbick & Co. chartered the steamer W. P. Ketcham and consort Geo. B. Owen, for corn to Kingston at 4 cents, free of tolls.

The Goodrich Co.'s side-wheel steamer Sheboygan is in dry-dock at Burger & Burger's shipyard, Manitowoc, receiving a thorough rebuilding.

P. H. Fleming, vessel agent, was elected manager of the Owen Line fleet, comprising the steamers Parks Foster and Ira H. Owen, by the directors a few days ago.

J. G. Keith & Co. chartered the schooner Olive Janette for barley to Buffalo at 2¼ cents, steamer C. S. Parnell for wheat to Buffalo at 2¾ cents, steamer Geo. B. Morley for corn to Buffalo at 2⅝ cents.

At a meeting of the Masters and Pilots' Harbor, No. 33, Chicago, held at their hall last Thursday afternoon, Captains William Shaw and Thomas Beggs were initiated as new members.

Capt. Carl Jacobson purchased from Capt. O. C. Oleson a one-third interest in the schooner Truman Moss at the rate of $1,200 for the whole. Capt. Jacobson will sail the schooner next season.

Grain freights are steady at 2 cents on oats, 2¼ cents on barley and 2⅝ cents on corn to Buffalo, and 4 cents free of tolls to Kingston and Lake Ontario ports, for storage and delivery in the spring.

The Goodrich Co.'s steamer Atlanta, Capt. Wm. Nicholson, made a record for herself on her first visit to Sturgeon Bay City, where she arrived with passengers and freight on Saturday last, January 9th, after forcing her way through solid ice 6 inches thick in the bay.

The Dunham Towing & Wrecking Co.'s tugs towed the steamer W. P. Ketcham to the Union elevator and the barge George B. Owen to an elevator at South Chicago to load grain. They also towed the broken-up hull of the old canal boat China out into the lake and consigned it to its last resting place.

The tug James Hay caught fire at 12:50 a. m. Friday. The tug was lying at the foot of La Salle street, just ahead of the fireboat Yosemite, the crew of which boat soon had their hose playing on her and put out the fire. The Hay's engineroom and pilot house received considerable damage.

J. J. Keenen, Riverside Boiler Works, is doing extensive repairs to the boilers of the Independent Tug Line's tugs Wm. Dickinson, Charnley and D. P. Hall; he also has several large contracts on stationary boilers, and is employing 50 men. He is promised considerable work on some of the boilers of the winter fleet laid up here.

The Independent Tug Line towed the schooner Olive Jeanette to the Minnesota elevator, the steamer Arizona to the Wabash elevator, the steamer Geo. W. Morley to the Keith elevator, the steamer C. S. Parnell to Armour's A. and B. elevators, the steamer New Orleans to the Iowa elevator, all to load grain for winter storage.

At J. B. Bates & Co.'s shipyard the steamer Tampa has received a thorough recalking from the light water mark up; the steamer Mecosta received a new mainmast, several new deck beams and some new deck; the steamer D. C. Whitney is receiving new bulwarks all around, the steamer S. C. Hall is receiving new deck beams and deck and new stanchions forward and aft; the steamer Viking is receiving new floor and some new stanchions, quick-work and rail aft; the steamer Germanic is having a $5,000 job of work done, comprising new covering board, solid bulwarks inside and out, entire new rail and recalking; the steamers Merida and John Mitchell are receiving part new floors; the steamer City of Paris has received some new hatch combings and deck.

PORT HURON.

Special Correspondence to Marine Record.

C. D. Thompson bid in the schooner A. J. McBrier at United States Marshal's sale for $425.00. He has a wrecking bill against her for more than she was worth.

The Jenks Shipbuilding Co. are pushing the work on their new boat. The mill is run day and night, sawing out the frames. The keel is laid, all ready to put up frames.

John E. Mills has sold to Capt. Chas. Ludwig, two-eighths, to Ed. J. Kendall one-eighth, of barge Montgomery, at the rate of $5,000 for the whole. Last spring Mr. Mills gave her a good rebuilding and she is in fine condition, rates A-2, and a good lumber boat; will walk off with 960 M lumber.

CLEVELAND.

Special Correspondence to the Marine Record.

Work at the yards of the Cleveland Ship Building Co. is progressing lively, considering the weather of the past few days. The large Wilson Transit Line steamer is to be launched next month and then work on the steel steamer Empire City, built to the order of Wolvin et al., of Duluth, will be pushed rapidly forward. In addition to the new work, the Cleveland Ship Building Co. are busily engaged on hull repairs brought about chiefly through groundings during the summer months.

A naval reserve corps has at last been organized at this port. Capt. D. H. Pond has been elected commander, Geo. H. Gibson, lieutenant, and F. A. Reynolds, ensign. Medical inspection and other preliminaries have yet to be filled before the corps can be duly recognized.

The Globe Iron Works Co. are busy on the following new tonnage: A large steel schooner for Teemy et al., Pittsburg, to tow with the John Harper or Alex Nimick. The steel barge building to the order of the Bessemer Steamship Co., will be launched in March.

Relative to new tonnage it is almost certain that the Northern Steamship Co. will place one or more contracts at an early date. There are also some individual firms figuring on new tonnage, but whether they will eventuate or not is more than I can say at the present time.

Philip Minch has bought the towbarges Dundee and Aberdeen from Capt. James Davidson, of Bay City. The price has not yet been reported. Mr. Minch had the vessels under charter last season. The Dundee will tow with the steamer H. A. Tuttle and the Aberdeen will be behind the steamer John N. Glidden. The Aberdeen measures 994 net tons and is rated A1* and valued at $50,000 in Inland Lloyds vessel register. The Dundee has the same rating and valuation as the Aberdeen.

Officers of the Excelsior Cardumping Machine Company were at Conneaut last week in conference with the Pittsburg, Shenango & Lake Erie railroad officials relative to erecting cardumping machines. The contracts were not awarded, but it is very probable that this company will secure the contract. At Cleveland recently, in the presence of President Dick, one of these machines picked a car from off the track, dumped it and replaced it again in twenty seconds. The average time for dumping a car is about two and one-half minutes. One of the big Bessemer steamers loading at Cleveland received thirty-nine cars in 110 minutes, which is a very good record. Another illustration of their work is that one machine on the docks here handled 23,157 cars from April 10 to December 4.

The Vulcan Oil Co., recently organized, promises to cut quite a figure in the lake coal trade, when its mine is in full operation. The company is capitalized at $120,000, and the officers are: Calvin Morris, president and treasurer; Loftus Cuddy, vice-president, and Martin Mullen, secretary. Of the capital of $120,000, one-half is applied on the coal lands, which comprise 631 acres in the Pan Handle district, and the other half will be used for machinery that is to be put in at once, as a shaft has already been sunk. It is expected that the mine will produce 750 tons a day next year and probably 1,200 tons daily in the following year. The coal will be moved to Cleveland over the Pennsylvania road and shipped from the harbor front dock of the Cuddy-Mullen Company.

FLOTSAM, JETSAM AND LAGAN.

Capt. Stines now commands the Goodrich liner Iowa.

The old schooner America has been dismantled at Chicago.

Repairs upon the steel steamer Pioneer have been completed at Cleveland.

It is announced that the new Rockefeller-Carnegie docks at Conneaut will handle 1,000,000 tons of coal next season. Work on the docks has not yet fairly begun.

Carrington is the name selected for the new steel barge building at South Chicago for C. W. Elphicke & Co. The steel barge building at the same yard for James Corrigan, of Cleveland, will be named Amazon.

The Milwaukee Dry Dock Co. intend to put in a plant for building and repairing iron and steel as well as wooden vessels—furthermore, they will lengthen the dry dock to accommodate the longest vessels afloat on the lakes.

A force of about thirty men, employed by Gilchrist & Fletcher, are engaged in repairing wooden vessels at Alpena. The schooners Nellie Mason and Kitchen and a couple of harbor tugs are now undergoing repairs.

Officials of the American Steel Barge Company deny that they are seeking to transfer the contract for a large steamer to some other yard. They claim they have plenty of room and would prefer looking after the work themselves.

On December 31 the car ferry Shenango No. 1 stranded west of the harbor at Conneaut in a fog. The wind shifted to the northeast soon after, and raised the water sufficiently for her to float herself. She was examined after reaching her slip, and found to be entirely uninjured.

The coroner's jury in the case of the death of the three men scalded fatally by an explosion on the Rhoda Stewart, returned a verdict of death by scalding. The jurymen stated it to be their belief that the United States inspectors weakened the boiler by testing it a short time ago.

The first use of water power at Niagara is said to have been made in 1745, at which time a very primitive saw mill was built and operated by it. This is said to have been the first utilization of this power prior to 1842, when August Porter conceived the plan of hydraulic canals, which were completed in 1861.

Because of the discharge of a lad employed in heating rivets for incompetency, a strike occurred at the shipyard of the American Steel Barge Company in West Superior yesterday, sixty other lads walking out. This closed the yard for the day, 250 men being compelled to return to their homes. New heaters are to be employed.

Capt. W. C. Brown will probably sail the steamer North Land, vice Capt. Henry Stone, next season. Capt. Stone has severed his connection with the Northern Steamship Company altogether, and will look for something else. It is probable that J. M. Davis, at Buffalo, will remain the marine superintendent of the Northern steamship line.

According to Capt. C. H. Sinclair, who has returned to Chicago from Toledo, the steamer J. S. Fay suffered severely while on the rocks at Scott's Point, Lake Michigan. Her bottom planking from stem to stern and bilge to bilge, will have to be renewed, and she will also require a new forefoot and part new stem, as well as sternpost, rudder and wheel.

MARINE ENGINEERS.

At a regular meeting of Huronia Marine Engineers' Beneficial Association, No. 43, held Wednesday evening, Dec. 30, the following officers were elected for the ensuing year: Past president, Wilbur P. Boynton; president, Geo. H. Bowen; first vice president, Walter Thorn; second vice president, Anthony Rim; treasurer, Arthur Armson; financial secretary, Irwin Buzzard; corresponding secretary, Geo. Miller; recording secretary, James Southgate; conductor, Harvey Deputy; chaplain, Peter Finney; doorkeeper, Henry Rondeau. Trustees—A. Armson, W. P. Boynton and E. M. Murdock. Representative to national convention, to be held in Washington, D. C.—Arthur Armson. Alternate, Geo. Miller.

MID-WINTER MARINE.

The Thompson Towing Co. have purchased the old fire and she will receive all necessary repairs, and new upper tug Wetherbee, recently dismantled in Cleveland. The tug is in excellent shape so far as her hull is concerned, works. It is said that the Crusader's engine will be put into her. If this is done she will be one of the best ice-breakers in this locality, and her size and power will add greatly to Port Huron's tug strength.

ECHOES FROM THE LAKE CARRIERS' ASSOCIATION.

The grain bill of lading was put in the hands of a competent committee.

A resolution against the bridge suggested to span Grand Island near Tonowanda, was, after considerable discussion, carried.

Capt. Wolvin of Duluth carried his motion in appointing a committee to look after lake levels and petition Congress for a preliminary survey on the subject.

The president and secretary are empowered to make a contract with Kennedy of Buffalo to handle grain at $3.50 per thousand bushels. Mr. J. C. Gilchrist thought that $3.25 was a better figure, but he was overruled.

All prominent vesselmen attended the meeting, to give names is simply superfluous. Furthermore, an extended review of the meeting and the expressed views of those who were present will be dealt with in these columns as opportunity offers.

F. W. Wheeler made a motion which met with unanimous approval that the rules of the steamboat inspection service be looked into and a report made thereon. Mr. Wheeler mentioned the location of fire pumps, testing of boilers by cold water pressure and generally recommended a revision of the steamboat inspection service.

At the regular meeting of the Marine Engineers' Beneficial Association, No. 4, held last Friday, the 8th, at Chicago, the following officers were elected: John Reif, president; Louis Allison, first vice president; Chas. Van Avery, second vice president; E. E. Morris, recording secretary; Geo. A. Grubb, corresponding secretary, 1537 George st.; Dan W. Wise, financial secretary; Jas. Donnelley, treasurer; Burt Rasch, chaplain; W. W. Grubb, conductor; John F. Conley, doorkeeper. Trustees—Jacob Reitz, Jos. T. Kelley, Thos. K. Hunter. Representatives—Thos. F. Dowd, Geo. A. Grubb. Michael Conley recommended for district deputy.

ANNUAL MEETING OF THE LAKE CARRIERS' ASSOCIATION.

Office of the Lake Carriers' Association,
Buffalo, N. Y., January 5, 1897.

To the Members of the Lake Carriers' Association:

The Board of Manaers of the Association submits herewith its annual report of the proceedings and operations of the Association during the past year.

TONNAGE OF THE ASSOCIATION.

Never in the history of the Association has it shown so large a growth as during the past year. In the report of the Board of Managers submitted in January, 1895, the members of the Association were congratulated upon the fact that the tonnage of the Association had increased from 590,000 tons in 1894 to 618,000 tons in 1895. The figures for 1895 were the largest in the history of the Association. This year the Board of Managers have to report an active tonnage on the books of the Association amounting to 722,863 net registered tons, an increase of 105,000 tons over the tonnage of the preceding year, which was the largest in the history of the Association. This large increase in the tonnage of the Association is doubly gratifying because it indicates that in spite of depression in business, causing a considerable decrease in the profits of vessels, the owners of tonnage on the great lakes have thus demonstrated in the most positive way their conviction that an organization like the Lake Carriers' Association is highly advantageous to those whose money is invested in vessel property, and is in fact a necessity which both commands and deserves their hearty support.

FINANCES OF THE ASSOCIATION.

At the annual meeting of the Association in 1894 the dues, which had formerly been four cents per net registered ton, were reduced to three cents per net registred ton. They have since remained at that figure. The treasurer's report, which is submitted herewith, shows that the dues have been remarkably well paid, but that they have not been sufficient during the past year to meet all expenses. The report shows that the tonnage dues collected for the season of 1896 have amounted to $20,328.96, and that the unpaid dues are only $390.85. We do not anticipate a failure to collect the dues remaining unpaid, and are of the opinion that the full amount will be collected. It will be noticed that the dues collected for the year 1896 are not quite equal to three cents per ton on the full tonnage of the Association. In explanation of this discrepancy I would say that a large amount of tonnage came out after the season of 1896 had opened. Some of these vessels did not go into commission until September. In all cases of new vessels coming out during the season it has always been the practice of the Association to collect dues for that portion of the season during which such new vessels were in possession of their owners. The treasurer's report shows in detail the expenditures of the past year, and also contains a full statement of the unpaid liabilities of the Association. From this statement it appears that the private light-keepers have been paid in full for the private lights maintained, and that all the salaries of the shipping-masters, excepting the chief shipping-master, have been paid, and also all miscellaneous bills. The unpaid liabilities consist of part of the salaries of the officers of the Association, and some small disbursements to be made from the present time until May 1st for rent of offices occupied by shipping-masters, etc. There is also a note of $1,000 due to the Union National Bank of Cleveland. The total unpaid liabilities of the Association over and above the uncollected dues amount to about $4,000. A careful examination of the report in comparison with former reports will easily show how this deficit came about. In the first place, among the disbursements for private lights, there is one item of $750, which is a balance for the private lights for 1895. It is therefore a deficit carried over from a former year. There is also an item of $200 for the balance of salary of the chief shipping-master for 1895. This accounts for about $1,000 for the deficit. Among the expenses of shipping-offices for the past year will be noticed several items amounting to another $1,000, relating to a shipping-office at Milwaukee. This is a new shipping-office never maintained until 1896, when it was established at the request of a very large number of members of the Association. While the Milwaukee shipping-office has not been quite as extensively used as had been anticipated, it has still shipped on board of vessels 453 men during the past season, and unquestionably it has been a decided convenience to many members of the Association.

The expenses of the Association for maintaining private lights during the year 1896 have been very large, in fact about $3,000 more than usual. An additional light has been maintained by the Association on the Middle Ground at Port Huron; six floating lights have been maintained during the entire season at Ballards Reef, and a set of water signals has been maintained by Duff & Gatfield and operated so as to inform vessels approaching the dangerous part of the Detroit River whether by day or by night, of any unusual and dangerous stage of the water. All members of the Association will agree that these expenses have been an absolute necessity; that they have saved in time and expense many times their cost. Nevertheless, they have taken about $3,000 from the treasury, and this item, with the extra cost of the shipping-office at Milwaukee, and the deficit carried over from the previous year, more than accounts for the present deficit. An examination of the treasurer's report will further show that the Association has been under a very large extra expense by reason of the fight which has been made against the placing of bridge piers in the Detroit River. The manner in which the Detroit bridge bill was pressed for passage by the powerful interests behind it, made it necessary to oppose them not only vigorously, but continuously. There was always the danger of a surprise. The bridge interests had watchful agents always on the spot at Washington, and this fact necessitated that there should be equal watchfulness and vigor in opposing them. At an important hearing before the Senate Committee on Commerce the advocates of the bridge appeared with a large delegation, including the governor of Michigan, the mayor of Detroit, the president and general counsel of the Michigan Central Railroad, able engineers employed by the railroad company, the president of the Detroit Chamber of Commerce, and a delegation of the most influential and prominent business men and lawyers of Detroit. The Lake Carriers' Association was also represented at the hearing by a considerable delegation, including a considerable number of vessel masters whose expert testimony would be a valuable aid to the committee. The counsel of the Association was obliged to be in Washington during a considerable part of last winter, and again on several occasions since. When his professional engagements compelled him to leave Washington, other officers of the Association were obliged to go there, and stand watch during his absence. All this involved very large expense, but the result has certainly justified the energetic measures which were taken.

As a partial offset against the deficit caused by this increase in the expenses of the Association, your Board of Managers fully expects that the Association will receive some assistance from the underwriters doing business on the Great Lakes towards the maintenance of the extra private lights required during the past season. The extra and temporary lights and water signals which we have maintained in 1896 have cost us about $3,000. We have proposed to the underwriters that we should maintain all our regular lights unaided and that we should stand half of the expense of these extra and temporary lights, and that they should contribute the other half of this extra expense, that is to say, about $1,500. We feel that we can fairly ask this of the underwriters for several reasons. In the first place, while the lighting at Ballards Reef and the water signals, etc., have undoubtedly saved vessel owners a considerable amount of time and something also in the way of expense, the largest part of the actual money saving has inured to the benefit of the insurance companies. In the second place, we feel that it is decidedly for the interests of the insurance companies that they should co-operate with the Lake Carriers' Association in such matters. It was certainly for their interest that the lights at Ballards Reef should be established promptly, and be maintained efficiently, and if a like emergency occurs again it will again be for their interest that an organization like ours should deal effectively with the situation for the interest both of owners and underwriters. It is also to be considered that we are not asking the underwriters to enter upon any continuous expenditure of this kind. We have already taken steps to have the government place lights at Ballards Reef, and there is little question but that they will be established at some time during the coming season of navigation, possibly when navigation opens. Once before we asked the underwriters to help us with some private lights, and they generously responded. We promised them then that the contribution was temporary, and that the lights for which they contributed would soon be taken up and maintained by the government. We secured the necessary legislation, and the lights in question, viz.; the Limekiln Crossing and Bar Point lightships, have been maintained by the government ever since. Finally, we have appealed to the underwriters to join with us because to a certain extent we and they have interests in common and are working along the same lines. We may fairly say to them that the Lake Carriers' Association is the best friend they have. The channel improvements and the aids to navigation which we have secured, are working night and day during the season of navigation to prevent losses. So also are the rules and regulations which we have obtained so often in the interests of safe navigation. We have asked the underwriters to compare the record of Ballards Reef for 1896 with that of 1895, and to count the collisions in the Sault River since the new regulations went into effect, and compare with those which prevailed in former seasons. We entertain no doubt of the success of this appeal. A number of the most prominent underwriters on the lakes have already written that they regard the matter favorably, and we may fairly expect their co-operation. In this event the deficit for the year will be reduced to about $2,500.

Your Board of Managers feels that it is altogether unlikely that the expenses of the Association another year will be as great as they have been duri ig the past year. They also feel that they can count upon quite a material increase in the tonnage of the Association next season. An increase of at least 40,000 tons may be said to be in sight already, consisting as it does of new vessels being built by members now in the Association, and of vessels already built and owned by members, but not yet put in commission. We do not think, therefore, the deficit in the treasury for the year, large though it is, so very serious a matter as it might at first sight appear.

OPERATIONS OF THE SHIPPING-OFFICES.

Shipping-offices of the Association have been maintained at Cleveland, Chicago, South Chicago, Buffalo, Ashtabula, Toledo and Milwaukee. The following condensed report taken from the annual report of Shipping-master Rumsey shows the number of men placed on board of vessels at each of these points, as follows:

Put on board at Cleveland	1503
Sent from Cleveland to other ports	75
Put on board at Chicago	2497
Sent from Chicago to other ports	486
Put on board at South Chicago	2739
Put on board at Buffalo	1912
Put on board at Ashtabula	1253
Sent from Ashtabula to other ports	40
Put on board at Toledo	880
Put on board at Milwaukee	453
Total	11,838

There have been no complaints received by the Board of Managers during the past year as to the operation of any of the shipping-offices. The Board desires to call your attention to the very large number of men placed on board of vessels by these offices. There are undoubtedly members of the Association who do not use the shipping-offices, but an examination of this report will convince them that these offices do a very extensive work for members, and that they are of great utility and value. The Board thinks there can be no question that the operation of these offices is not only of value to those who actually apply to them for men, but that the fact that they are in operation and stand ready to do their work makes them very valuable to all members of the Association. The treasurer's report shows that about $9,500 per annum of the Association's funds are required to maintain and operate these shipping-offices. In other words, it cost the Association about eighty cents for each man actually put on board a vessel by the shipping-masters.

THE DETROIT BRIDGE BILL.

In reviewing the operations of the Association during the past year, the first place should be given to a brief account of the fight which the Association has put up against the placing of obstructions in the Detroit River. Considerable has been said on this subject in the discussion of the treasurer's report. It is perhaps sufficient to say now that a bridge bill was introduced in Congress last winter for a railroad bridge across the Detroit River with two large piers in the channel. It was felt by the members of the Association that the throat of the great commerce which moves on the Great Lakes should not be obstructed by bridge piers. At the present time there are no piers of any kind in the navigable channel on the Great Lakes between Buffalo and Duluth and Chicago. The local conditions at Detroit in the way of smoke, shore lights, cross traffic, local passenger service, were all such as to make piers in the river opposite the city doubly objectionable. The last annual meeting determined that the Lake Carriers' Association ought to oppose the bridge with all its power. The counsel of the Association undertook the fight, and he has put up a contest against great odds which should win for him the hearty thanks of every member of this organization. He has been at all times during the past year ready to drop his own private business to work for the Association in this manner. No one, except the other officers of the Association, can know what an amount of time and work and thought he has devoted to this subject. As a result of his efforts, the bridge bill is dead so far as this Congress is concerned, and it is the opinion of the best judges that it will never be revived in anything like its present form, and that if so revived it will certainly be defeated. The thanks of the Association in this matter are due not only to the counsel of the Association, but to other members who have acted under his direction in opposing the bridge and have turned from their private affairs to assist our counsel in the task which he had undertaken. The president of the Association has made repeated trips to Washington and other members of the Association have also worked hard in a variety of ways.

REGULATING NAVIGATION IN THE ST. MARY'S RIVER.

The last annual meeting had under consideration the adoption of a system of rules and regulations to govern vessels in the dangerous parts of the St. Mary's River, designed to diminish the number of accidents and collisions in that locality. A committee was appointed to act upon the subject and they subsequently went to Washington to take up the matter with the Commissioner of Navigation and the revenue marine officers. A bill was passed

CONTINUED ON PAGE 8.

CORRESPONDENCE.

TO RAISE LAKE LEVELS.

Buffalo, January 12, 1897.

Editor Marine Record:

I learn from a recent issue of the Record that Capt. McDougall, of whaleback fame, is in favor of placing dams and lock gates at certain points to improve lake levels. You will no doubt remember that I advocated this method in the Record over two years ago and then stated that I was in possession of the most simple and best engineering plan that has yet been suggested, furthermore, the system is in practical operation here. I am still confident that my plans to raise the lake levels are the best and most economical from every standpoint.

CAPT. F. W. BUSHER.

RUSSIAN MARINE EXPOSITION.

Marquam Building, Room 623, Portland, Ore.

Editor Marine Record:

With the Imperial Sanction of His Majesty the Emperor of Russia, the Nevsky Yacht Club, under the august patronage of Her Imperial Highness, the Grand Duchess Xenia Alexandrowna, will give at St. Petersburg, during the months of February and March, 1897, an exhibition of objects of amateur, industrial and trading navigation, embracing models, drawings, photographs, descriptions of ships, yachts, launches, boats (pleasure, fishing, etc.), or any article pertaining to industrial and trading navigation; including all kinds of fishing gear (apparatus, machines, traps, nets, hooks, etc.), models, drawings, photographs, descriptions or articles pertaining thereto.

Due awards will be made to the exhibitors of objects aforesaid. The club has selected the undersigned for its representative in America for the invitation of exponents and collection of exhibits of objects relating to industrial navigation, and in conformity therewith, also my wish that the United States may hold one of the most interesting sections at the coming exhibition, I take this method to earnestly solicit you to forward any of the objects aforesaid to N. de Sytenko, Esq., Chairman of Committe, Exhibition of Industrial Navigation, St. Petersburg, Russia.

Respectfully yours,

THEO. BARKER.

PRESSURE OF WATER.

Attention is called in the Foundry to crushed mass of castings now lying in a scrap yard at Pittsburg, which demonstrates the tremendous pressure of water at a great depth. It was constructed for a diving bell, designed for use in Lake Michigan, was a cube of about six feet, tapering slightly at both ends, the material being phosphor bronze of five-eighths thickness. Each plate was cast with a flange, and the plates were bolted together, the plates placed as closely together as was consistent with strength, the side plates being further strengthened by ribs an inch thick and two inches wide, the entire structure being strongly braced. The windows, intended for outlooks, were three inches square, fortified with iron bars and set with glass plates an inch thick. The entire weight of the bell was 23,000 pounds. On completion it was sent to Milwaukee and towed out into the lake some twelve miles, where there was over 200 feet of water, and was sent down for test. On reaching about that depth, strong timbers, which had been attached to it, came to the surface in a splintered state, and, on the bell being hauled up, it was found crushed into a shapeless mass. The inch-thick plate glass bull's-eyes were pulverized, and the entire body of the bell forced inward until none of its original outlines remained. On a basis of 200 feet depth, the pressure that crushed this seemingly invulnerable structure was 86.8 pounds per square inch, or 853,924 pounds to each side of six feet square, or 1,861.7 tons total pressure on the cube.

USE OF HOMING PIGEONS.

The use of homing pigeons as messengers is said to have received considerable attention at the United States Naval Academy, at Annapolis, and, according to the New York Times, the government has recently established messenger pigeon stations at all the principal navy yards on the Atlantic and Pacific coasts, which have been organized as the result of satisfactory experiments made at the Naval Academy. Improvements in method and apparatus follow the new uses of the birds. The old way of attaching a quill with the message to the tail feather of the homing pigeon has been improved recently by an invention of Prof. Henri Marion, of the Naval Academy, a small water tight aluminum message holder, weighing less than eight grains, which can be fastened to the pigeon in an instant.

COMMERCIAL STATISTICS.

The official report of the Commercial Statistics of Portage Lake Ship Canal, Lake Superior, Mich., has been furnished by Major Clinton B. Sears, Corps of Engineers, U. S. A. We find from a comparison of the commerce through the Portage Lake Canal for the seasons of 1895 and 1896 as follows:

Items.	Designation.	Seasons. 1895.	1896.	Increase Amount.	Decrease Amount.
Steam	Number...	2,972	3,068	96	.....
Sail	" ...	476	500	24	.....
Tonnage, reg'd	Net tons..	1,013,660	1,076,548	62,888	.....
Passengers	Number...	24,809	41,262	16,453	.....
Coal	Net tons..	329,246	398,964	69,718	.....
Flour	Barrels....	850,095	774,143	.....	75,952
Wheat	Bushels...	261,210	225,430	.....	35,780
Grain (not wheat)	" ...	67,345	100,533	33,188	.....
Salt	Barrels....	45,028	99 813	54,785	.....
Copper	Net tons..	69,904	74,473	4,569	.....
Iron Ore	" " ..	17,930	16,755	.....	1,175
Pig Iron	" " ..	7,047	8,032	985	.....
Manuf. Iron	" " ..	17,890	14,172	.....	3,718
Lumber	M. ft. B.M.	86,235	103,504	17,269	.....
Logs	" " " "	31,717	39,115	7,398	.....
Building Stone	Net tons..	10,060	14,674	4,614	.....
Misc Mdse	" " ..	147,174	127,447	.....	19,727
Total Freight	" " ..	923,756	1,041,933	118,177	.....

From a recapitulation of 1896 business it is learned that 1,166 vessels of 709,475 net tons, having a total freight of 581,272 tons, and the number of passengers, 20,901, was up-bound. The number of vessels passing through the canal bound down, was 608, with a net tonnage of 314,504, total freight tons of 321,081 and a passenger list of 20,361.

In addition to the foregoing there has been a large traffic of tugs, scows, rafts, etc. Major Sears is to be congratulated on the excellent tabular work he authorized and has had compiled at this point.

FREIGHT RATES ON WHEAT FROM NEW YORK TO LIVERPOOL.

Year.	Rates (in Cents per Bushel). Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1875	21.94	18.82	14.56	12.34	13.94	16.00	.....	.....	.....	.....	.....	.....
1880	7.00	7.62	12.00	11.90	9.00	10.12	14.60	14.76	11.38	12.30	15.12	14.62
1885	9.30	5.32	7.30	8.38	5.60	5.00	4.76	5.30	7.72	5.70	5.12	6.48
1890	11.13	10.75	8.00	4.00	4.13	3.75	4.25	2.00	1.38	.38	4.50	5.00
1891	7.25	4.75	3.00	3.00	3.25	4.00	4.00	6.00	8.63	11.13	11.50	8.75
1892	9.00	6.38	7.50	3.75	4.88	4.00	5.50	4.25	4.00	6.00	4.88	.....
1893	3.00	3.25	2.75	2.63	3.75	5.88	6.50	7.13	4.38	5.25	6.00	5.88
1894	6.25	4.75	4.63	4.25	2.38	3.50	2.88	1.63	1.75	2.25	5.63	5.8 8

TACOMA'S COMMERCE.

Report by Harbormaster Clift of the ocean commerce at the port of Tacoma for the year 1896:

IMPORTS.

20 cargoes Chinese and Japanese merchandise (coastwise imports not included), total value	$5,807,478 12

EXPORTS.

3,076,821 bushels wheat (foreign)	$2,218,247 10
434,619 bushels wheat (coastwise)	251,771 40
326,475 barrels flour (foreign)	1,012,675 77
56,199 barrels flour (coastwise)	159,571 50
86,444,401 feet lumber	775,246 50
318,806 tons coal	952,494 00
Merchandise to China and Japan	3,126,032 00
Merchandise to British Columbia	331,232 21
Total exports 1896	$8,827,270 48
Total exports 1895	4,633,389 78
Total exports 1894	6,663,848 00
Total exports 1893	5,802,165 00
Inward registered tonnage	571,104
Outward registered tonnage	616,892
Inward cargo tonnage	78,714
Outward registered tonnage	640,851

Deep sea arrivals, 423. Departures, 414.

A FLEET FOR SALE.

We have no authentic information of the rumor, but it is reported that the Jenks Shipbuilding Company, of Port Huron, is offering its fleet for sale. It consists of the steamers Linden, Runnels and Porter and barges Cahoon, Brainerd and Maxwell. This is said to be on account of the expiration of the Portage Lake copper contract which the company has had for several seasons.

A LIGHT SHIP VISTOR.

Captain Fogarty and his men are mourning the probable death of Dick, the seagull that became famous for having passed 24 consecutive winters on or in the vicinity of Brenton's reef lightship, about 20 miles off the south shore of Newport. Dick began to attract attention nearly 20 years ago, because about October 1 of each year he would appear off the lightship and remain near it till about April 1, when he would fly northward for the summer. As years passed and there was no break in the regularity of Dick's coming and going his fame grew, and not a few persons visited the lightship to see him. Captain Fogarty and his predecessors have been called upon to write many letters regarding the gull, and there have been hundreds of inquiries from people as to whether the stories about Dick were true.

Last winter it was noted that Dick was quite feeble with age, and it was suggested that he be shot and stuffed for exhibition in the Smithsonian Institution, for it was thought that he would never be able to get back to the lightship, even if he survived the winter. But Captain Fogarty and his men refused to harm Dick. They wanted very much to have the gull's body mounted, but they were so attached to him that they would do him no injury. They were willing to await his natural death, trusting that he would die where they could secure his remains. It appears, though, from his failure to appear at the lightship so far this fall that he has died in other parts, and the half dozen scientists and institutions who hoped to have his remains will be disappointed.

It may be that Dick had been a regular visitor at the lightship for more than 24 years, but if so he had not made himself known. The first that is remembered of him was in the winter of 1871-2. He was a gray gull, a species that is not considered very rare. Early in his career at the lightship he had remarkably smooth and rich plumage, but as years went by he gradually lost his beauty, and during the last few winters he possessed a very shabby coat. He was royally treated by the captain and men of the lightship, who had his meals, of salt pork mostly, prepared on time, and when the hour arrived for Dick to eat he would call for his food under the side of the boat. Besides his regular habits, Dick had other very remarkable characteristics, one of which was his desire always to be alone. Unlike others of his kind, he was never seen with other gulls.

GERMANY AS A MARITIME STATE.

United States Consul Monaghan at Chemnitz gives some surprising comparative figures to show that already Germany stands second only to England and much exceeds the United States in the value of her exports and imports. For 1895 these aggregated for England $3,125,820,600, for Germany $1,926,729,000, for the United States $1,524,770,000. Germany has also gone ahead of France in ocean tonnage, and Hamburg, her great seaport, is surpassed only by London, and she has the largest single steamship company in the world. All this is the work of little more than twenty years and it grew out of almost nothing. Now the Germans demand a powerful navy to protect this magnificent merchant marine and prevent its destruction as happened to Spain and Holland.

EASTERN FREIGHT REPORT.

The usual weekly freight report furnished the Record by Messrs. Funch, Edye & Co., states that from New England ports the brisk business in steam tonnage reported in our last has not been carried over into the present week. Whilst there are undoubtedly still some contracts for prompt shipment of grain cargoes unprovided with tonnage, there is, on the other hand, no apparent new business forming, and, under the circumstances, shippers are withdrawing from the market, excepting a concession on part of owners in consequence of this reduced demand. The same state of affairs seems to obtain all along our coast, with a decided requirement of tonnage, but inability to pay owners enhanced demand. It appears to us that only absolute necessity will induce charterers to fall in with owners' terms, and, under the circumstances, a considerable shrinkage in the volume of business during the near future appears inevitable.

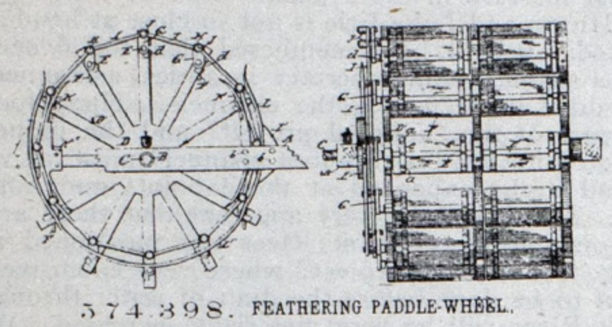
LIGHTING UP.

Hereafter Byron Whitaker, of Detroit, will devote his entire time to the management of his steamer and schooner. He retires from the position of senior member of the insurance firm of B. Whitaker & Sons, and the business will be conducted by his sons, Charles and W. H. Whitaker, under the name of Whitaker Bros.

MARINE PATENTS.

No. 574,398—Mary A. Davis. Spokane.

Claim.—1. In a feathering paddle-wheel, the combination with spiders having bearings near the ends of their radial arms, crank-shafts journaled therein, with paddles and cranks secured thereto, links connecting the wrists



574,398. FEATHERING PADDLE-WHEEL.

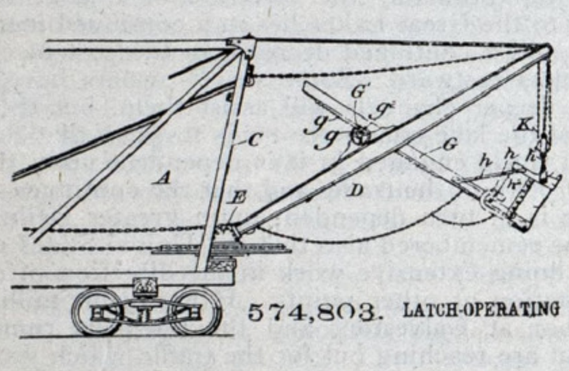
of all the cranks and anti-friction rollers thereon, of cams mounted near the front and rear of the wheel, and adapted to receive said rollers, the cams being practically arcs of a circle, the center of which is the length of each crank above the center of the wheel.

2. In a feathering paddle-wheel, the combination of the paddle-shafts E E, provided with cranks G G, their wrists H H, anti-friction-rollers J J, and connecting-links I I, a boss (i) on one link engaging an eye in the other, substantially as and for the purpose set forth.

No. 574,803—Latch Operating Device for Steam Shovels or Dredges. Josiah C. Houck, South Bend, Ind.

Claim.—1. A latch-operating device for dredging and excavating machines comprising the boom-frame, or derrick, an oscillating bucket-arm, a bucket secured thereto having a hinged bottom and latch connections, a backing-chain and a latch-chain connecting said backing-chain to the latch-bolt.

2. In a dredging and excavating machine, the combination of the oscillating bucket-arm, the bucket secured



574,803. LATCH-OPERATING

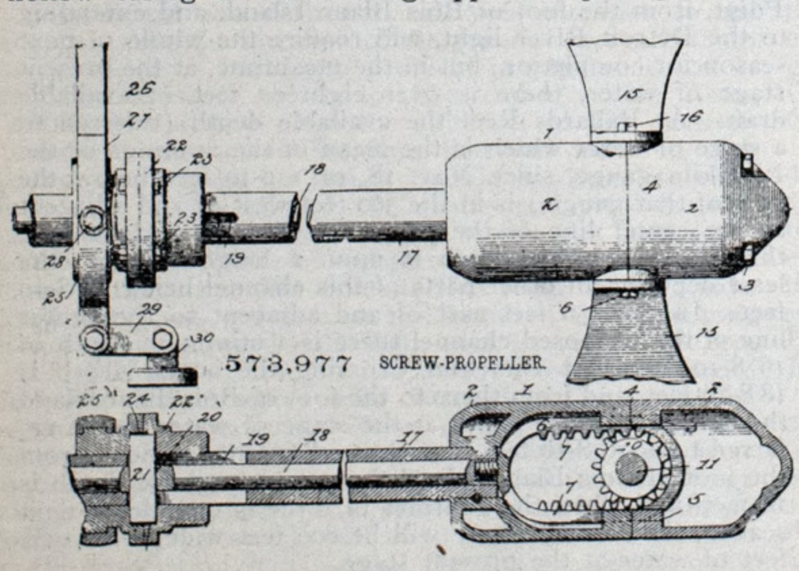
thereto provided with a hinged bottom and latch, a chain connecting the bucket-arm with a fixed part of the machine and a latch-chain connecting the backing-chain with the latch.

3. In a dredging and excavating machine, the combinations with the boom or derrick frame, the endwise-moving oscillating bucket-arm, the hinged bucket and latch, the backing-chain and a latch-chain and coupling for adjustably connecting said chains.

4. The combination with the backing-chain, of a dredging-machine or a similar chain, of an adjustable clip comprising a staple having threaded ends and nuts thereon and cleats through which the ends of said staple pass to embrace the links of the chain and provide an outstanding loop to receive the hook of a connecting-chain.

No. 573,977—Screw Propeller. George W. Hubbard, Chicago.

Claim.—1. In a propeller-wheel, the combination of a hollow casing or hub having opposite openings in its



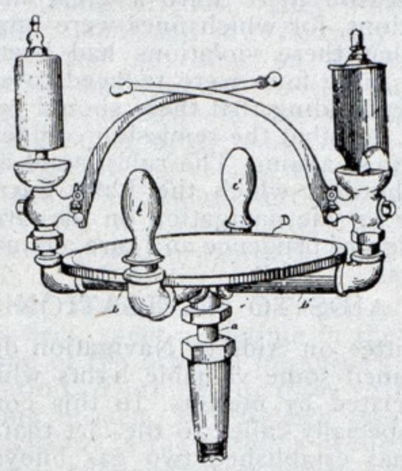
573,977 SCREW-PROPELLER.

sides, a loose pin within the casing, pinions journaled on the pin and having hubs projecting through the openings in the casing, a bar having two toothed arms engaging said pinions to move them in opposite directions, propeller-blades secured to the hubs of the pinions, and means to operate the rack-bar.

2. The combination with a hollow driving-shaft and a hollow casing or hub rigidly connected to it and having opposite openings in its sides, of a loose pin within the casing, pinions journaled on the pin and having hubs extending through the openings, propeller-blades secured to the hubs, a double rack-bar engaging with said pinions, a shaft connected to the rack-bar and extending longitudinally within the hollow driving-shaft, devices to connect the two shafts to have common rotary movement and permit the inner shaft to have independent longitudinal movement, and mechanism to move the inner shaft longitudinally.

No. 574,474—Course Indicating Apparatus. Michael Brabaw, Detroit.

Claim.—In combination with a plurality of steam-whistles sounding different notes, a revoluble frame carrying said steam-whistles adapted to be actuated to bring any one of said steam-whistles to a given point with respect to the vessel, whereby the whistle to be sounded is in-

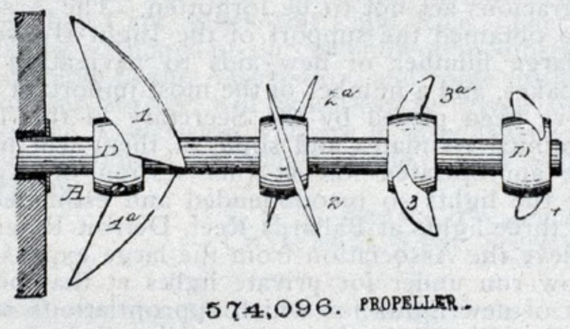


574,474. COURSE-INDICATING

dicated, a chart revolubly secured on said frame and adapted to bring a given designating-character thereon into juxtaposition to any one of said whistles, and thereby indicate by such juxtaposition the signal to be given, substantially as described.

No. 574,096—Propeller. Albert L. Kraus, Peabody, Mass.

Claim.—The combination with a shaft, of the graduated

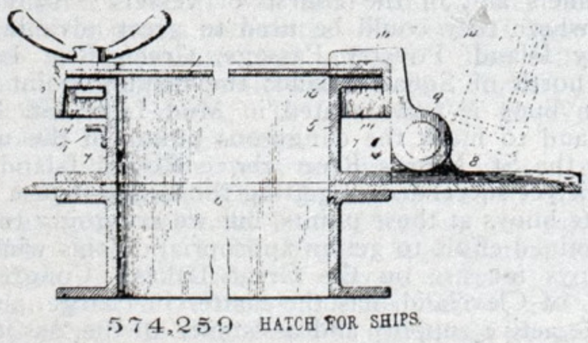


574,096. PROPELLER.

series of sets of blades spaced apart and secured on the shaft, the blades of the outer set being proportionately of greater width from side edge to side edge than those of the other sets, and the set of larger blades being in advance of the others.

No. 574,259—Hatch for Ships. Joseph R. Oldham, Cleveland.

Claim.—1. In a ship or other vessel, the combination with the hatch-coaming consisting of channel-bars secured to the deck and provided with bolt-holes in the upper horizontal portions, of the metal hatch formed with



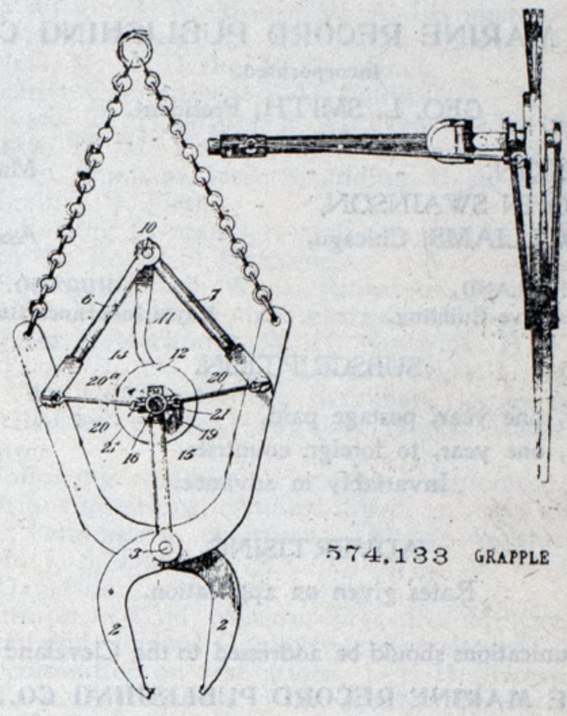
574,259 HATCH FOR SHIPS.

coinciding bolt holes near its edges and downwardly-depending flanges at the sides, the angle-bars at the ends, the hinges connected with one of these bars and with one of the bars of the coaming and the securing-bolts, passing through said bolt-holes.

2. In a ship or other vessel, the combination with the hatch-coaming consisting of channel-bars secured to the deck and formed with bolt-holes in the upper horizontal portions, of the hinged hatch provided with downwardly-depending flanges and formed with bolt-holes coinciding with the bolt-holes in said channel-bars, the inverted headed bolts passing through said holes, the nuts, and the angle lugs secured to the coaming in vertical alinement with said bolts.

No. 574,133—Grapple. Lars H. Carlson. Lorain, O.

Claim.—1. The combination with a pair of tong-levers and their pivot, of the two members of a toggle-joint, pivotally united to each other and to the tong members, respectively, and of a length sufficient to cause them to maintain an angle with respect to each other at the far-



574,133 GRAPPLE

thest limit of expansion of the tong-levers, an oscillatory member operatively connected with the tong-levers, an arm pivotally united to the pivot-pin of the toggle-joint members, and eccentrically pivoted to the oscillatory member, and means for imparting motion to the oscillatory member.

INJUSTICE TO MARINE ENGINEERS.

From the time, less than sixty years ago, when the first steam vessel crossed the Atlantic, the evolution of the marine engineer has been rapid. His is the one class of marine craftsmen that has kept pace with the developments of this fast speeding age, and he stands today the finished project of a century that has created more new types and more new occupations than any that has preceded him. The marine engineer today is more important than any deck officer, but his importance is as little recognized by the non-seafaring man as his identity is concealed from view. Down in the bowels of the vessel, he controls not only the propulsion, but the steering, lighting, pumping, anchoring and ventilation of the modern marine structure, and on the warship he is even responsible for the manipulation of the heavy guns. The eyes that steer the ship are those of the officer of the watch, but the brain that guides the ship to her destination and regulates her internal economy is the brain of the marine engineer. His is the real responsibility, and we are afraid, his is the least share of the honor that is given to those who serve their country or their employers with courage and devotion on the sea. All the world heard of the gallantry of of Captain Kane of the Calliope in working his ship out of the Samoa anchorage in the teeth of a cyclone; who heard of the struggle of the engineer officers with the machinery down below, and how many know even the names of them?—The Pall Mall Gazette.

WINTER MARINE.

According to the records at the customs office the four east shore lines carried eastward out of Milwaukee during the month of December 378,370 barrels of flour, 356,618 bushels of grain and 12,279 tons of feed, as against 230,759 barrels of flour, 688,198 bushels of grain and 4,796 tons of feed in 1895. This constitutes an increase of 147,611 barrels of flour and 7,278 tons of feed for 1896, and a decrease in grain from the figures of 1895 of 331,580 bushels.

The amounts carried by each of the four lines during the past month were as follows:

Flint & Pere Marquette line—110,959 barrels of flour, 3,000 bushels of wheat, 79,401 bushels of oats, 140,217 bushels of barley and 2,871 tons of feed.

Grand Haven line—114,731 barrels of flour, 12,000 bushels of wheat and 6,460 tons of feed.

Muskegon and Grand Rapids line—61,850 barrels of flour and 771 tons of feed.

St. Joseph and Benton Harbor line—60,830 barrels of flour, 122,000 bushels of oats and 2,177 tons of feed.

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The thanks of *The Record* are due the Hydrographer, Commander Sigsbee, U. S. N., Washington, D. C., for a copy of the North Pacific Pilot Chart for current month.

A notable vessel is the torpedo boat Turbinia, of which the total displacement when fully loaded is only 42 tons. This vessel has attained a speed of nearly 30 knots, which is considerably in excess of what has been accomplished by such a small vessel. The feature of this vessel is that she is propelled by steam turbines, and the future of the craft will be waited with interest. To Charles Algernon Parsons is due the credit that has and may accrue from this great departure.

From all accounts the lumber trade will not be as active next season as in the past. A large supply of logs has been drawn from the Canadian side to keep saw mills going. Some lumbermen want a duty on this stumpage, which is chiefly American anyway, others do not. The eventual result will be to lessen the transportation of lumber. As Quebec is to the East so is Michigan to the West, that is, trees are too scarce, and too far back to pay for logging them in. On the whole, if lumbermen want to keep at work, they ought not to hesitate about getting out logs wherever they can—Canadian or otherwise.

While admitting the vast increase of new German tonnage, it may be noted that the production has not come entirely from the large busy German yards as Great Britain furnished 93,000 tons to Germany out of a total of 372,000 tons, built for foreign orders. In the actual building of vessels the United States stands close to her nearest competitor and what is perhaps more to the point, she has built all of her own naval tonnage, a fact which but few other maritime powers can point to. In the case of Messrs. Yarrow & Co., London, that firm built during the year four twin screw steel torpedo boat destroyers of 27 knots speed, fitted with triple-expansion engines, and water-tube boilers; five shallow draught steel steamers of various dimensions and speeds; seven steam launches; one twin screw steel yacht, 80 feet long, 12 feet beam; six first-class steel torpedo boats, of 25½ knots speed, 152 ft. 6 in. long, 15 ft. 3 in. beam, fitted with triple expansion engines and Yarrow's patent water-tube boilers; one second-class torpedo boat of 20 knots speed. It is to be noted that all the output of this firm was for foreign governments and owners, the six first-class torpedo boats being to the order of the Chilian Government.

ANNUAL MEETING OF THE LAKE CARRIERS' ASSOCIATION.

CONTINUED FROM PAGE 5.

through Congress giving the Secretary of the Treasury power to prescribe rules and regulations for the navigation of the St. Mary's River, such rules and regulations when prescribed to have the force of law. A great deal of pains were taken in the drafting of the rules, and the matter of speed to be permitted in different localities was very carefully considered. At the opening of navigation the rules were put in force and have remained in force during the season. It was understood that the rules were in some degree experimental, and the idea of those who framed them was to give them a fair trial and amend them only so far as experience showed they could be improved. There is no doubt that these rules have been of great assistance in preventing accidents in the St. Mary's River. Whether the regulations are now perfect or not is a matter in which opinions will undoubtedly differ. The power to make the rules rests with the Secretary of the Treasury, and he will undoubtedly be guided in the matter largely by the wishes of vessel owners and by the reports of the revenue offiecrs, whose duty it is to enforce the regulations. During the early part of the season there were a great many violations of the regulations, for which fines were imposed. Where it appeared that these violations had been technical or unintentional, these fines were reduced to a nominal sum upon the understanding that there should be no repetition of the offense, and that the remission of fines could not be so easily obtained again. The rules stand as another one of the contributions which the Lake Carriers' Association has made to safe navigation on the Great Lakes and to the protection of prudence and care against recklessness and selfishness.

AIDS TO NAVIGATION.

The Committee on Aids to Navigation during the past year has obtained some valuable lights which have been greatly appreciated by masters. In this connection your attention is especially called to the fact that the Canadian government has established two gas buoys at Point au Pelee Passage which have given great satisfaction to vessel owners. The prompt response which the Canadian authorities made to the request of our American vessel owners for additional aids to navigation at this dangerous point on the Canadian side of the international boundary line, where our government was powerless to protect our vessels, deserves the thanks of the Association. With a comparatively small tonnage on the Great Lakes, and with a vast coast to light on the ocean and St. Lawrence River, where the Canadian marine interests are large, the Canadian authorities needed little urging to induce a prompt response to our request for assistance on Lake Erie. This was a gracious act not to be forgotten. The Association has also obtained the support of the Light-House Board for a large number of new aids to navigation on the Great Lakes, and a number of the most important of these aids have been placed by the Secretary of the Treasury in his annual estimates and some of them will undoubtedly be appropriated for at this session of Congress. Among the lights so recommended and estimated for is a set of three lights at Ballards Reef, Detroit River, which will relieve the Association from the large expense which they now run under for private lights at that point. A number of new lights for which appropriations were obtained some time ago, but where delay had occurred in the building of the light, have now been put in operation. The fog-signal at North Manitou Island is perhaps the most important of these, and the new light at that point will be ready when navigation opens in the spring.

In one respect the past year has been a disappointment to the Committee on Aids to Navigation. There are a number of localities on the Great Lakes where gas buoys would be of great assistance to navigation. These gas buoys are inexpensive and cost little to operate, as they do not need the services of a light-keeper, and do not easily get out of repair. While, of course, they do not take the place of a large light-ship or a coast light, they can be used to mark turning points and small obstructions in channels and in the course of vessels. Among the places where they could be used to great advantage are Gravelly Island, Poverty Passage, Green Bay, Lansing Shoal, north of Squaw Island; the turning point where the Can buoy is now located in Mud Lake, St. Mary's River, and to mark the dangerous points in the navigation of the St. Mary's River above Round Island. We have not yet succeeded in getting the Light-House Board to locate buoys at these points, but we are going to make a determined effort to get an appropriation this winter for gas buoys for use on the Great Lakes. Congressman Burton, of Cleveland, has the matter in charge, and will have the active support and assistance of the Association in his efforts. We believe that the interests asking for these gas buoys are so large and so deserving, that Congress will not refuse the comparatively small appropriation necessary for the protection of these and other localities in this economical and effective way.

INCREASE IN THE AVAILABLE DRAFT OF WATER.

The past year has seen some important events in the history of lake navigation. The work on the so-called twenty-foot channel between Duluth, Chicago and Buffalo has progressed rapidly, and has reached a point where it has added materially to the available draft of water at Lake Superior. The government has also placed some of the most important harbors on the Great Lakes under the contract system, and very extensive work is to be undertaken at Chicago, Duluth, Cleveland and Buffalo. In the passage between Lake Huron and Lake Erie, however, where much progress has been made in the improvements at the points named in the twenty-foot channel project, it has become more than ever apparent that any material increase in the available draft of water between Lake Huron and Lake Erie is not so close at hand as was expected. It will be remembered that the twenty-foot channel project names certain localities where work is to be done in deepening the channels. These localities form part of the "adopted project" and the money appropriated for the "twenty-foot channel" must, as we understand it, be expended at those points and not elsewhere. It has become very apparent that there are certain points in the Detroit River not mentioned in the "twenty-foot channel project" where very extensive work has got to be done before the draft of water through the Detroit River will be very materially increased. We refer of course to Ballards Reef, and to the channel abreast Bois Blanc Island. Some work has been done at Ballards Reef, but it has not been done under the twenty-foot channel appropriation or under the so-called contract system, by virtue of which a contract can be let for the entire work. The work at Ballards Reef, so far as it has gone, has been done under small appropriations made in the River and Harbor bill. Under this system it will certainly be several years before the Ballards Reef channel is properly improved. Meantime the millions which the government has spent in providing deeper water at Round Island, at the canal and lock at the Sault, in Hay Lake Channel, at Sailor's Encampment, at the foot of Lake Huron, at St. Clair Flats, Grosse Point, Limekiln Crossing and Barr Point has given to vessels only a slight additional draft, and can never give them anything further until the channel at Bois Blanc Island and Ballards Reef is extensively improved. It is highly important that this Association, representing as it does, one of the great interests for whose benefit the government has made these large expenditures, with results which are so far very disappointing, consider this situation. We say that the vessel interests represent one of the great interests for which the channels were projected. The other interest, and a still greater one, is that of the producer of the West and Northwest. Unquestionably the salvation of a large territory adjacent to the Great Lakes lies in a continued increase of facilities and a continued decrease in the cost of carrying its products eastward. Some vessel owners have doubts whether deeper channels will assist them, but the whole history of the lake commerce tends to show that the prosperity of those engaged in it is dependent upon the continued growth of the traffic and that the continued growth of traffic is in turn dependent upon greater facilities. It should be remembered also that the United States government is doing extensive work in the direction of cheaper transportation at other points. It has spent millions on the harbor at Galveston, and the railroads running to that point are reaching out for the traffic which was formerly tributary to the Great Lakes. The state of New York is now spending nine millions of dollars on improvements in the Erie Canal, which are designed to assist and co-operate with the deeper channels in the lakes in maintaining the supremacy of the northern route from the West to the seaboard. The members of this Association should carefully consider this subject in its broadest aspects, and determine what action should be taken to expedite the completion of the deep water channel. If Ballards Reef and the lower Detroit River are to be brought in harmony with the other points where extensive improvements have been made, the work there should be put under the contract system and sufficient appropriation made to push it along as fast as possible.

The followin data shows substantially the present condition of the deep water channel between Lake Erie and Lake Huron. The work at the foot of Lake Huron as far as the entrance of the St. Clair River, is finished. The approach to the St. Clair Flats Canal, and the work at the Canal itself, is finished. The new Grosse Point channel at the foot of Lake St. Clair will be finished in June or July, 1897. At present there is an available draft of water at that point of eighteen feet. The improvement at Bar Point, from the foot of Bois Blanc Island, and extending to the Detroit River light, will require the whole of next season for completion, but in the meantime, at the present stage of water, there is over eighteen feet of available draft. At Ballards Reef the available depth (referred to a stage of water which is the mean of the readings of the Limekiln gauge, since Nov. 18, or 1 2-10 feet below the zero of that gauge,) is in the 300 feet west of and adjacent to the center line of the proposed channel, sixteen feet, three inches. This depth is upon a ledge of rock, the least depth at all other parts of this channel being 16 8-10 feet. In the 150 feet east of and adjacent to the center line of the proposed channel there is a minimum depth of 16 8-10 feet. At Limekiln Crossing the actual depth is 18 8-10 feet, and from there to the foot of Bois Blanc Island the actual available depth at the stage of water above referred to is 16 8-10 feet in a channel 600 feet wide. From the foot of Bois Blanc Island the actual available depth is 18 feet, and when the contract in force is completed next season, the channel there will be 800 feet wide, with 19½ feet of water at the present stage.

There is in the hands of Col. Lydecker about $50,000 available for work next season at Ballards Reef and at Limekiln Crossing to the foot of Bois Blanc Island. Specifications for the work are not yet prepared, as it is desired to make some surveys through the ice, if possible,

before preparing them and letting the contract. Col. Lydecker states that he is not now able to predict what increased depth may be obtained at Ballards Reef and below the Limekiln Crossing with the funds now available, but he hopes to secure a channel depth of approximately 18 feet at the stage of water referred to above.

GRAIN SHOVELLING AT BUFFALO.

In the spring of 1896, the Association renewed its contract with James Kennedy, of Buffalo, to shovel all grain brought to that port in vessels of the Association. Some changes were made in the contract with Mr. Kennedy, but the scale of charges for shovelling remained as in 1895. It will be remembered that in 1893 the shovelling charges at Buffalo were as follows. For grain in the hold of steamers, $4.00 per thousand; for grain between decks in steamers, $4.50 per thousand; for wet or damaged grain, $10.00 per thousand; for grain in sailing vessels, $3.50 per thousand. In 1894 the rates for shovelling grain in the hold of steamers was reduced to $3.75 per thousand, the other rates remaining as before. In 1895 the Lake Carriers' Association first took hold of the matter, and after very careful negotiation carried on for the vessel owners by the present head of the Association, a contract was entered into by which the shovelling rate was reduced to $3.50 per thousand on all grain, irrespective of its position in the vessels, or of the kind and condition of the cargo, or of the character of the vessel in which it was carried.

It is always desirable to remind the members of the Association of the benefits they receive from the various improvements and reforms which it has instituted. There are always some members who are too ready to forget these benefits, and it is for them that your Board of Managers has caused to be prepared an estimate showing the operations of the grain shovelling contract for 1896 in Buffalo, and showing as closely as can be estimated the actual saving which this contract has effected for vessel owners.

There was received at Buffalo of grain and flaxseed in the season of 1896, excluding grain received at Black Rock, and not shovelled under our contract, 164,000,000 bushels, on which the shovelling charges prior to the season of 1895 were $3.50 per thousand for sailing vessels, $4.00 per thousand for single-deck steamers and the lower hold of steamers having two decks, $4.50 per thousand when steam shovels were used, and for hand shovelling on all grain between decks and in fantails, $10.00 per thousand, when the grain was heated or otherwise damaged, anywhere from $6.00 to $10.00 per thousand, when a vessel unloaded at two or more elevators, on the quantity that was discharged at the last elevator. Under the operation of the contract for the season of 1896, there has been a saving of twenty-five cents per bushel on 114,000,000 bushels in the lower hold of steamers. This amounts to $28,500, which is considerably in excess of entire sum collected from vessel owners by the Lake Carriers' Association during the year 1896. On the cargo of steamers between decks, amounting to 20,000,000 bushels, there has been saved an additional $20,000. On 15,000,000 bushels damaged and hot grain there has been saved $97,500, a total of $146,000 saved during the season of 1896 by the operations of the contract system, without taking into account the extra charge under the old system for remnants—that is to say, the grain left in the vessels on arriving at a second elevator, and without taking into account a great saving of time, which to the vessel owner is the same as money. It is the judgment of those who have carefully watched the operations of the grain shovelling contract at Buffalo during the past year, that an unprecedented quantity of grain has been handled in a manner thoroughly satisfactory. The increase in the amount of grain which has arrived at Buffalo this year over any previous year has been so large that at times, when large numbers of vessels were bunched at the port, some little delay was inevitable, but the business has been handled with great dispatch. Masters of vessels will unquestionably testify that the contractor has been zealous and accommodating, and that delays in unloading grain cargoes have been much less than might have been expected from the unusual conditions prevailing at that port.

FUELING AT BUFFALO.

Your Board also desires to call your attention to the fact that while the question of the price of fuel at Buffalo has not been as burning a problem in 1896 as it was in 1895, the saving of money to the members of the Association did not stop when the agitation of this question stopped a year ago. The fight that was made in 1895 against over-charge for fuel in Buffalo has done its work during the season of 1896. In quality and price the fuel furnished steamers in Buffalo this season has been satisfactory, if the absence of complaints can be taken as evidence of that fact. We estimate that vessel owners have saved forty cents per ton on two hundred thousand tons of fuel taken on board at Buffalo, a total saving of $80,000.

It is well also to note the fact that the reductions in ore trimming charges which were obtained two years ago by negotiation between committees of the Association and the parties doing the trimming at the various ports have continued during the season of 1896, and the very large saving which was obtained in previous years has continued during the past year. It will undoubtedly be the pleasure of the Association at its annual meeting to appoint committees as in former years to take up the question of grain shovelling at Buffalo and ore trimming at the various ore shipping ports, so that these very important questions in which all vessel owners are concerned may be dealt with systematically and for the benefit of all.

MISCELLANEOUS.

Among less important things which have been accomplished during the past year, but which mean something in convenience and saving of time to our members, is the appointment by the United States government of deputy collectors of customs who issue clearances to vessels at the Mesaba Dock, Duluth, thus making it unnecessary for captains to go to the custom house at Duluth to get their clearance papers.

DEATH OF PROMINENT MEMBERS OF THE ASSOCIATION.

In conclusion it is the sad duty of your Board of Managers to report that during the past year the Association has suffered grievous losses in the deaths of a number of its most prominent members. William S. Mack, John Rice, E. M. Peck, James Pickands, E. J. Webb and Conrad Starke have all died since the last annual meeting. Of these, Conrad Starke had been a member of the Association for two or three years before his death, though he never took any active part in its affairs. Col. Pickands and H. J. Webb seldom attended meetings of the Association in person, but the large tonnage which they represented has always been enrolled upon our books, and their associates in the management of this tonnage have always been our staunch friends. They were progressive and public spirited men, and always ready to do their share in any concerted movement on the part of vessel owners to improve their service to the public, or the conditions under which business was transacted. Capt. Peck had been a member of the Association since it was organized. He took an active interest in all its operations, always attended its annual meetings, on several occasions served actively on its committees, and might have been the president of the organization had he not felt that his age was a bar to his acceptance of that office.

Mr. Washington Bullard, the manager of the Union Steamboat Co.'s fleet, spent a lifetime in the vessel business; and was one of the original organizers of the Lake Carriers' Association. Until two or three years ago, when his health became broken, Mr. Bullard was one of the most active participants in the business of the Association. At one time he was prominently mentioned for the presidency of the organization, but withdrew his name from consideration, as his health would not permit him to serve.

It is hardly necessary to speak of the services of Capt. Rice and Capt. Mack to the Lake Carriers' Association. The members of the Association who are in attendance at the annual meeting will miss their presence on the floor, and will feel the want of their valuable leadership in various matters which will come up for discussion. Both kept themselves thoroughly informed in all matters dealt with by the Board of Managers, and no two members of the Association served oftener on the active sub-committees which transact the most important business of the Association than Capt. Mack and Capt. Rice. The death in one year of so many of our prominent members is a very serious blow to the Association, and some fitting expression of our sorrow will doubtless be given by the members of the Association who are in attendance.

Respectfully submitted on behalf of the Board of Managers, by

J. J. H. Brown, President.
Charles H. Keep, Secretary.

The annual meeting of the Lake Carriers' Association opened on Tuesday morning at the Cadillac Hotel, Detroit, as previously announced.

Capt. J. J. H. Brown called the annual meeting of the Lake Carriers' Association to order. He said:

"Gentlemen—We are again met together after another year, and together with the pleasure of renewed acquaintance must come the feeling of sorrow for some whose familiar faces are no longer present, and whose hearty help we shall sorely miss.

"The first thing on the program will be the secretary's report, which we will now hear read."

Secretary C. H. Keep read the report of the Board of Managers. At the conclusion of the report a motion was made to adopt it, which was unanimously done.

The treasurer's report was then read. After hearing the treasurer's report a committee of seven was appointed to choose vice-presidents and officers. The following gentlemen formed the committee: A. A. Parker, James Corrigan, Edward Smith, J. C. Gilchrist, W. H. Wolf, J. G. Keith and Thomas Cranage.

Capt. James W. Millen was unanimously chosen president, his only opponent, Capt. J. S. Dunham, of Chicago, giving away graciously and himself making the nominating speech. Capt. J. J. H. Brown, in preparing to vacate his chair, said: "I feel very proud to have occupied the position granted to me by this association, and I am sure this present vote will be one of merit, not geography. I have the honor and pleasure of presenting to you, Capt. James W. Millen, of Detroit, as our next president."

Capt. Dunham said: "Capt. Millen's services in the past are well known, and it gives me pleasure to offer his name as president of our association for 1897." The room rang with applause and when the captain took the chair and made a few brief remarks, thanking the members of the association for the honor conferred upon him, it was heartily renewed. The feeling seemed very unanimous, and the members appeared pleased at the smoothness with which the election passed off, thanks to Capt. Dunham.

The several committees are as follows:

Vice-presidents.—J. S. Dunham, C. E. Benham, David Carter, S. D. Caldwell, W. H. Wolf, W. F. Farrington, H. L. Shaw, F. J. Firth, L. S. Sullivan, M. J. Cummings, George Berriman.

Executive Committee.—James Corrigan, chairman; John Mitchell, H. A. Hawgood, Thomas Wilson, M. A. Bradley, J. C. Gilchrist, L. C. Waldo, D. C. Whitney, W. P. Henry, J. J. H. Brown, R. P. Fitzgerald, C. W. Elphicke, H. G. Dalton, W. C. Richardson, B. L. Pennington.

Aids to Navigation.—Geo. P. McKay, chairman; W. H. Becker, C. E. Benham, J. G. Keith, W. A. Hawgood, Thomas Wilson, J. W. Moore, W. A. Livingstone, W. M. Egan, Frank Owen, A. W. Colton, James Davidson, Alvin Neal, M. M. Drake, Philip Minch.

Legislative Committee.—S. D. Caldwell, L. M. Bowers, E. T. Evans, P. P. Miller, H. C. French, Charles Paine, Ed. Smith, H. M. Hanna, James Corrigan, W. Livingstone, J. S. Dunham, Jesse Spaulding, C. A. Eddy, Alex. McDougall, F. J. Firth.

The following ex-members and new members are mentioned in the Board of Managers:

Washington Bullard, W. C. Rinearson, John Rice, W. S. Mack, E. M. Peck, Conrad Starke. Additions.—Charles Paine, John Kelderhouse, W. H. Gratwick, H. L. Shaw, W. H. Wolf, W. H. Meyer, L. C. Waldo, L. M. Bowers, A. W. Colton, George Berriman, James McBrier, W. H. Becker, W. A. Hawgood, W. H. Mack, W. E. Farrington.

The following committees were then appointed to consider various questions. Annual dues:

B. L. Pennington, chairman; Thomas Wilson, James Corrigan, J. S. Dunham, J. C. Gilchrist, M. A. Bradley, James Davidson.

On motion of Capt. Wilson, Treasurer McKay, Secretary Keep and Counsel Goulder were re-elected.

As a committee on resolutions, J. J. H. Brown, chairman; W. A. Livingstone, J. G. Keith, Thomas Cranage and W. H. Becker were appointed.

Messrs. H. A. Hawgood, chairman; M. A. Bradley, Fred Palmer, John Corrigan and B. L. Pennington were named a committee to secure a reduction in ore-trimming charges if possible.

C. E. Benham made a plea for the Shipmasters' Association before the Lake Carriers, and said the latter should show more interest and be willing to aid more the men who had charge of their vessels. John Corrigan indorsed Capt. Benham's views, and said vessel owners should induce their captains to enter the Shipmasters' Association.

On motion of Charles Strasmer, representing the Buffalo lake and rail lines, this committee was appointed to arrange for grain shoveling at Buffalo for the next year: James Corrigan, J. C. Gilchrist, Charles Strasmer, Jas. McKenzie, Edward Smith, James Davidson, H. A. Hawgood.

A committee on memorials of the dead was appointed, composed of J. J. H. Brown, W. A. Livingstone, J. G. Keith, Thomas Cranage, W. H. Becker, C. F. Bielman, John Mitchell.

An important measure was the fixing of dues, which was finally set at 3 cents on vessels of 1,200 tons (registered) and over, and on everything smaller, 2 cents. W. A. Livingstone strenuously objected to this low rate, contending that there was now a deficit, and that the proposed rate was too low to enable the association to come out free of debt at the close of 1897; but he was finally overruled. He proposed a straight rate of 3½ cents on all tonnage, but representatives of smaller tonnage vigorously objected, and the matter stood as above.

Another matter dealt with was the following:

"Whereas, The vessel maintained by the United States is the fourth-class gunboat Michigan, now nearly 53 years old, and by reason of her antiquated design in hull and engines and low speed is an obsolete war vessel and has not the speed necessary to overtake even our modern freight vessels; and,

"Whereas, At a survey last fall on said steamer by a naval board it was decided to continue her in her present service, and make sundry repairs for such continuation of service;

"Resolved, That this Association protest against her future use and ask such steps of the navy department and needed legislation by congress as will provide the lakes with a fully equipped man-of-war, suited for best protecting the interests centered in the lakes, and further providing that such vessel shall be built by a lake yard."

"Resolved, That this Associatiou shall protest against the continued use of the gunboat Michigan for a purpose for which she is entirely unsuited, and shall also ask such action by the government as will provide the Great Lakes with a fully equipped, modern man-of-war, suited to the purpose of best protecting the interests centered in the Great Lakes, and further providing that such vessel shall be built by a lake shipyard."

This was signed by the committee, which had the matter under discussion, viz.: J. J. H. Brown, Thomas Cranage, John Mitchell, C. F. Bielman, W. A. Livingstone.

Perhaps the most important committee of all, and at the same time the smallest, was composed of W. A. Livingstone, C. H. Keep and E. T. Evans, to collect data on the lake levels, depths of harbors and all kindred matters, and report to the Association when their work was completed. It will, of course, take considerable time for this committee to obtain the necessary information, and their report will be one of great interest and value. Owing to lengthy discussions by the committees recess was taken until 2 o'clock.

BOARD OF TRADE CERTIFICLTES

Candidates for marine engineers' licenses in England are required, among other things, to answer ten questions from the appended list.

1. What parts of an engine are generally made of wrought iron?
2. What parts of an engine are generally made of cast iron?
3. For what parts of an engine is steel sometimes used?
4. What parts of an engine are generally made of brass or gun metal?
5. Where is "white" metal sometimes used? On account of what property possessed by it is it adopted? What objection is there to its more general use?
6. For what parts is Muntz metal sometimes used? Is it malleable. For what properties is it valued?
7. What difference is there in the composition of cast iron, of wrought iron, and of steel?
8. How can cast iron, wrought iron, and steel be distinguished from each other?
9. What are the different properties of cast iron, of wrought iron, and of steel?
10. What is meant by the terms, "breaking stress," "proof stress," and "safe working stress"?
11. What is the cohesive strength, or breaking stress, of good, ordinary wrought iron?
12. Tempering steel: How is it done, and in what order do the colors come?
13. What is case-hardening?
14. Which of the common metals or alloys can be forged, and which of them are brittle or short?
15. What is meant by "welding?" Which of the common metals can be welded?
16. The expansion of metals by heat: Give examples of this in the engine and in the boiler.
17. In the construction of cylindrical marine boilers, for what parts have the plates to be worked hot? When the material is steel what precautionary treatment of these plates is afterward necessary?
18. What is double riveting? In what parts of cylindrical marine boilers is double riveting employed? In which of the shell seams is it most necessary?
19. What is "caulking," and how are seams prepared for caulking?
20. Describe the different ways of fastening the ends of the main stay of a boiler. What are the merits of or objections to the different plans?
21. What strain per square inch is allowed on boiler stays?
22. Describe a riveted stay and state where such stays are commonly used.
23. Where are thin plates to be looked for in a boiler as it wears, and how is the thinness to be detected?
24. How are boiler tubes fixed? What are "stay tubes" and how are they secured?
25. Where is it generally that boiler tubes leak? How is this defect repaired? What are the causes of this leaking?
26. What are the causes of cracked tube plates? Where are the cracks situated? How are they repaired?
27. What is the difference between a "dry uptake" and a "wet uptake?" Which requires most repair? Why? Where have you seen a wet uptake?
28. What is a superheater? What is its construction? What valves are on it? There is sometimes a glass gauge on it; what is that for?
29. What parts of a marine tubular boiler are first injured by shortness of water?
30. Where are angle irons sometimes used in the construction of a boiler and where are flanged plates used?
31. Priming: To what causes is it attributed? What means are applied to prevent it? What evils may be produced by it?
32. Funnel draught: What makes it? What checks it?
33. Flame sometimes seen at the top of the funnel: What causes this appearance? Is it beneficial or is it detrimental? Why so?
34. A blast pipe: What is its construction? Where is it placed? For what is it used?
35. How many bottom blow-off cocks are generally fitted to each boiler and why are they so fitted?
36. Blow-off cocks are sometimes fited with a spanner guard: For what purpose is this? Describe how the guard is formed.
37. Test cocks or water-gauge cocks: Where are they placed? At what heights? Must the cocks themselves be at those heights? What provision is made for cleaning these cocks should they ever become choked? When there are no test cocks how is the height of the water ascertained?
38. What is a dead-weight safety valve? Of what are the rubbing surfaces formed? How is a lock-up valve arranged to admit of lifting it or of turning it around, and to prevent adding to the weight?
39. About what area of safety valve is now required by the Board of Trade? What area was formerly required, and on what ground has that been altered? What is the effect of suddenly opening a safety valve when steam is up? To about what extent do safety valves rise when blowing off without being eased by hand?
40. Spring-loaded safety valves: What advantages have they that are not possessed by dead-weight valves? What are the disadvantages as compared with dead-weight valves?
41. Of what pieces does a glass water-gauge mounting consist? How does it act? Where is it placed? At what height? Is it liale to derangement? How is its working tested?
42. Glass water-gauges have sometimes pipe connections top and bottom: What is the object of this arrangement? Should there be cocks at the extremeties of these pipes?
43. Describe a Bourdon steam-gauge. Some gauges have an inverted syphon pipe below them; what is its use?
44. Why is a small cock sometimes put on the pipe leading to a steam-gauge? Where should it be placed, and what error might be made by omitting to use it?
45. Do steam gauges indicate the total pressure of the steam, or only a portion of that pressure? What is the pressure measured from?

A LAWYER'S SIDE OF IT.

"Is admiralty law not changing?" repeated John C. Shaw, in answer to a Detroit Journal reporter's query. "Well, I don't know that it is. But, again, I think there are some changes, for instance, in the number of suits tried. They are fewer than they used to be, and as time goes on, larger and larger boats are built, involving greater and greater sums of money, which are risked when disaster comes. I may say cases are fewer and larger. Then again small owners are becoming members of combinations somewhat, and there are fewer clients. In other words the business is narrowing, but growing more valuable. In that it is but following the system of the age, combination."

THE MARINE RECORD.

The Marine Record, recently burned out at its quarters in Cleveland, has now nearly entirely recovered from the loss. The new machines for printing will soon be placed in position and if sympathy from a large number of subscribers will be of any assistance, the Record will see a prosperous new year.—Detroit Journal.

LITERARY NOTES.

Cassier's Magazine for January opens with a finely illustrated article on small refrigerating plants, giving accounts of all sorts of refrigerating rooms and ice-making outfits. Orrin E. Dunlap has a fine account of the power transmission of Niagara Falls. Boiler feed dump efficiency, condensation without water supply, copper mining in the United States, American lake and ocean steamship models and current topics are among the topics of this month's discussion.

We have received from the publishers of Chattanooga, Tenn., the eighteenth annual number of the Tradesman. It is an attractive folio of some 260 pages, and presents the most complete, exhaustive and valuable review of the South, its resources, development and possibilities, that, so far as we know, has ever been published. The special articles are from the leading thinkers, statisticians and business men in our country; the information given is the result of careful investigation and practical knowledge. The business directories and statistics are most valuable features and it will be preserved as a reference book on all subejcts pertaining to the South and its resources. Among its contributors are six Southern governors, the chief statistician of the United States census bureau, twelve leading Southern journalists, twenty leading Southern Chamber of Commerce officials, such writers as Edward Atkinson, and a score or more of statistical writers and industrial authorities in their special lines, whose reputation is national and international. One of the many features is a complete directory of 5,000 of the leading industrial plants of the Southern states.

TOTAL LOSSES FOR 1896.

(The list embraces fortysix vessels valued at $415,900.)

Appended is a list of steam and sail vessels which have been destroyed by fire, collision and stranding since the 1895 report. It includes the schooner Julia Willard, sunk by the ice in Lake Erie, December 31, 1895; the steamer Puritan, burned at Manistee, December 31, 1895, and the steamer Salina, burned on St. Clair river, January 1, 1896. The steamers lost number sixteen, measuring 7,152 tons net, and valued at $369,500; two tugs of 100 net tons measurement and $11,800 value; twenty-eight schooners of 7,654 net tons measurement and $94,600 value. Total number vessels lost, 46; tonnage, 14,906; value, $415,900. In 1895 the total losses numbered 63, tonnage 48,975, value $1,290,100. The 1896 losses are the smallest recorded in four years.

A PIONEER GONE HENCE.

Capt. Charles Irving died at Windsor, Ont., January 6, at the age of 81 years. It is said that Capt. Irving took the first vessel from Lake Huron to Lake Superior before the canal was constructed, and had charge of the building of the gates of the canal. To him also is due the credit for establishing a ferry line between Windsor and Detroit. At that time only canoes were used instead of the steamers of today. Capt. Irving was born in Scotland, January 5, 1816, came to St. John's, N. B., when a boy, and in 1836 reached Detroit. When a boy Thomas W. Palmer, the universally known millionaire, was saved from drowning by Capt. Irving.

TRADE NOTES.

Details and drawings of a handsome steam yacht for one of the large inland lakes are under way by the Marine Iron Works, Chicago. It will contain one of their fore and aft compound high speed condensing engines and a Roberts' government test safety water tube marine boiler, etc.

The same company are building the machinery outfit for the new fast steam yacht for Mr. Osborne, of New York. They are also building for a Mexican trading company, one of the very lightest draft river steamers ever demanded (10 inches on a beam of 9 feet).

NOTES.

The new English first-class battleship Caesar, recently launched at Portsmouth, is described as being 390 feet long, 75 feet broad, with a draft of 27 feet and a displacement of 14,900 tons. This ship is to be provided with triple expansion engines and double screws, developing ordinarily 10,000 horse-power, and a speed of 16.5 knots, but may be increased to 12,000 horse-power with a speed of 17.5 knots per hour. The vessel is to be armed with 4 kinds of 12-inch guns in barbette, 12 2-inch rapid-fire guns, 16 12-inch, and 12 3-pound, and eight Maxim guns. Six searchlights, four torpedo tubes below the water line and one above, are added to the armament. The sides of the ship will be protected by 14-inch harveyized steel plates.

To prevent a recurrence of rate-cutting next summer by the lake lines, the joint traffic pool has devised a new plan by which the lake line pool will be subject to the direction of the board of managers of the railroad pool. If this scheme can be made to work the difference between the lake rates and the railroad rates will be maintained at 2½ cents and this, of course, will prove a serious blow to lake shipping interests. There is a prospect, however, that the scheme of the joint traffic pool will be frustrated. President Hill's Northern Steamship Company remains independent and will not submit to the dictation of the Eastern pool. There is also a chance of the establishment of one or more independent lake lines from Chicago to Buffalo.

Transfers of vessel property recently recorded at the Milwaukee customs office are: Tug Lindrup-Cecilia Sorenson, of Manistee, to Fred T. Schram, of Milwaukee, the whole, $2,500. Tug L. A. Schultz—Fred T. Schram to Theodore G. Schram, of Milwaukee, one-third, $2,100. Schooner Norman—Peter Anderson to Peter F. Goodlet, of Ephraim, Wis., one-half, $170.

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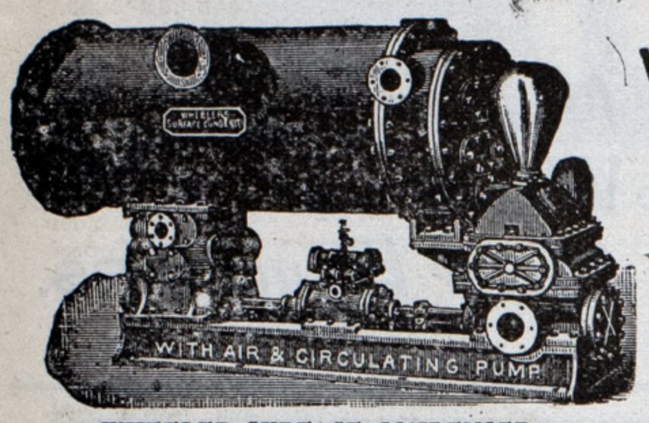

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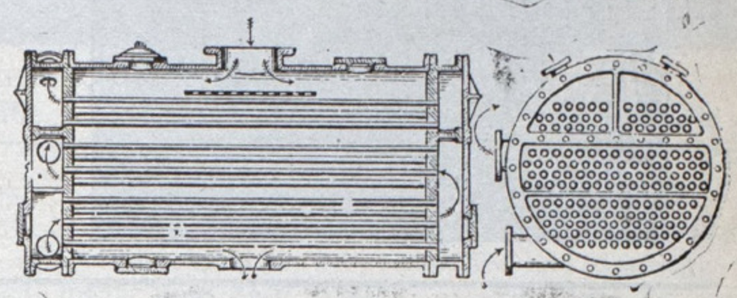

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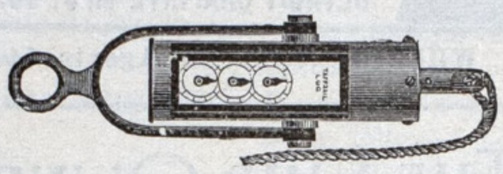

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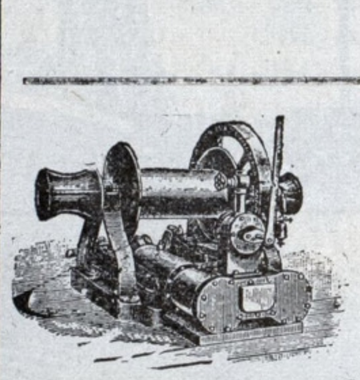
PROPOSALS.

U. S. Engineer Office, Duluth, Minn., Dec. 16, 1896. Sealed proposals for dredging about 21,000,000 cubic yards in the harbor of Duluth, Minn., and Superior, Wis., will be received here until noon, Feb. 15, 1897, and then publicly opened. Information furnished on application. Clinton B. Sears, Major Engrs. 52-6

NOTICE.

Capt. Fish, who sailed the schooner Riverside for the past two seasons, will find it to his interest to communicate with W. W. Kunkle, Ashtabula, O.—Adv.



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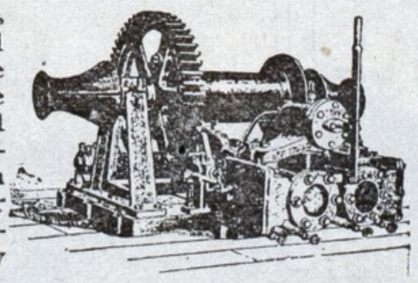

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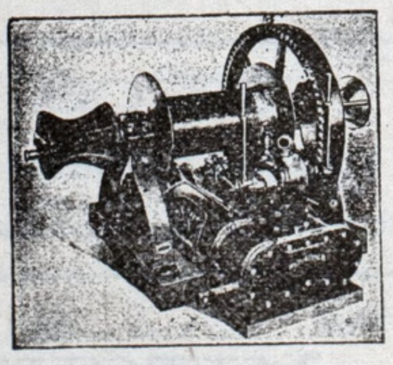

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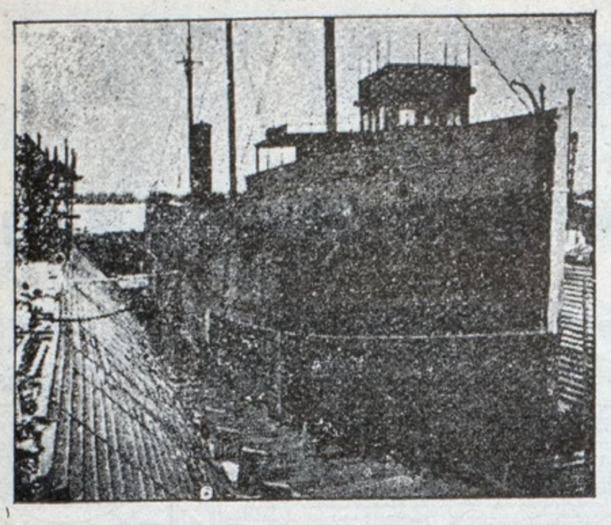

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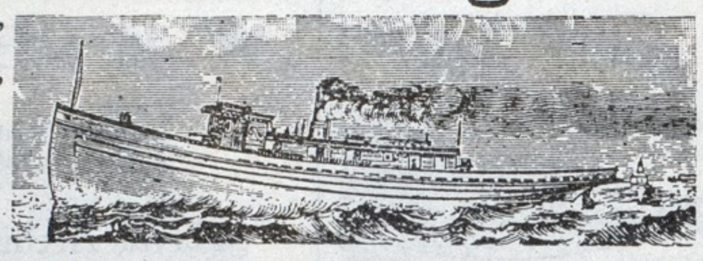

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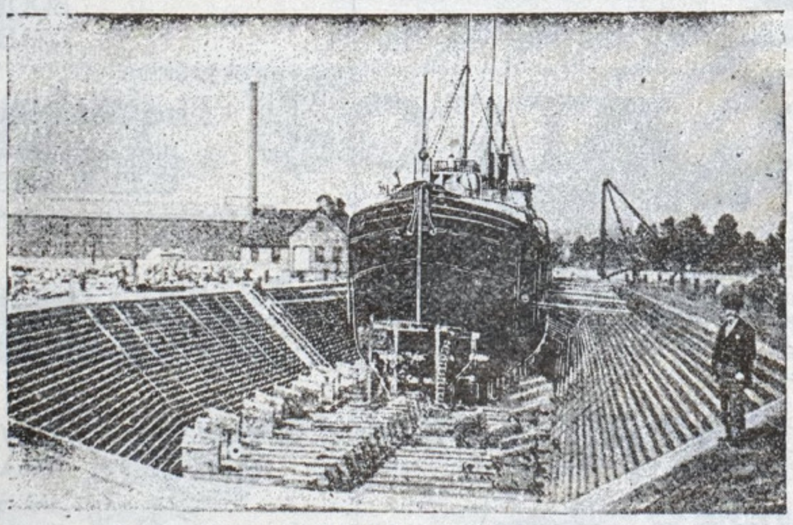

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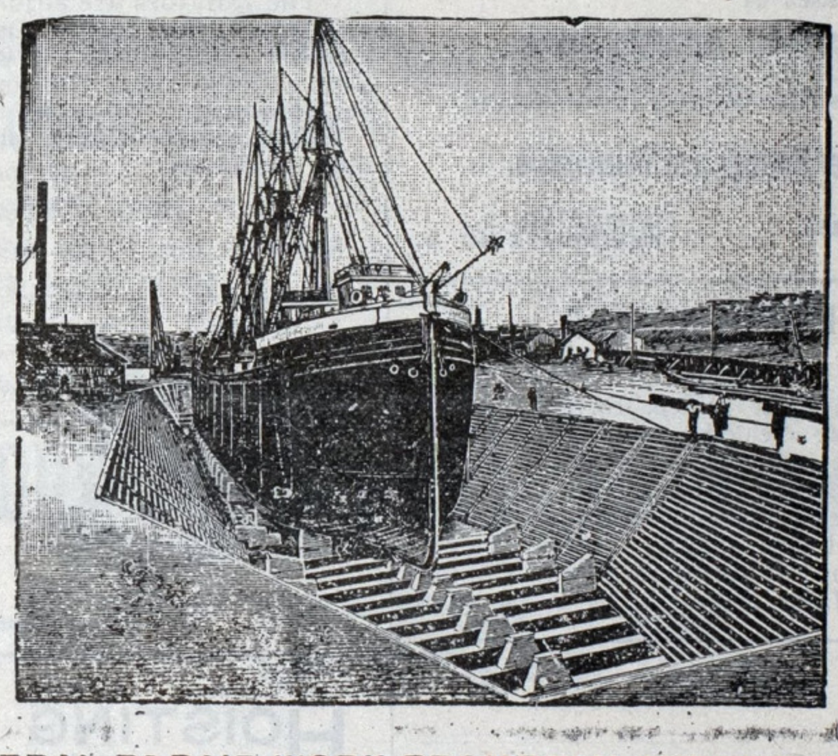

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